Acid-Base parameters of cerebrospinal fluid in patients with Febrile Convulsion

Abstract

Introduction: Fever and convulsion is the most common neurologic emergency among children which is observed in 2 to 4 percent of children aged between six months up to six years old and half of them occure between the age of one to two years old. The main cause of this phenomenon has not been identified yet although several pathogens have been mentioned so far. Since the existance of respiratory alkalosis has been recently noted as the basic mechanism in fever and convulsion appearance, we have studied acid-base parameters in arterial blood and CSF of patients in order to get more information about the disease's pathogen.

Methods and materials: We studied 30 patients suffering from fever and convulsion who had referred to BooAli hospital of Ardebil over the period of summer 1388 to summer 1389. A researcher-developed questionnaire which included demographic information, type of convulsion, amount of acid-base parameters in arterial blood and CSF and paraclinic experiments' results for the mentioned patients. Final results were examined by means of SPSS-19 software and statistical T-Test.

Results: Among whole patients suffering from fever and convulsion, 60% percent were boys while 40% were girls. Besides 63% of the patients were infants under the age of one and 23% were infants between one to two years old. 86.7% of the patients suffered from simplex convulsion(recurrent:6.7%) and 13.3% from complex convulsion. The average O_2 pressure of patients in arterial blood and CSF were respectively 76.95mmHg and 131.19mmHg; the average CO_2 pressure in arterial blood and CSF equaled 24.53mmHg and 16.06mmHg respectively; the average pH in arterial blood and CSF were respectively 7.51 and 7.74 and finally the average HCO_3 Of patients in arterial blood and CSF equaled 17.67mmol/l and 21.36mmol/l respectively. According to the consequences above and presented hypothesises in studying pH of CSF liquid in patients suffering from fever and convulsion there is a significant difference with the average of society(Pvalue=0.001). Also PCO_2 of CSF in mentioned patients has meaningful difference with the average of society(Pvalue=0.001)

Discussion: Based on the consequences which showed the average pH of patients was meaningfully more than average of normal society and CO_2 pressure in patients was meaningfully less than the average, it was clear that patients suffering from F.C. had respiratory alkalosis; of course there was an emphasis on respiratory in some studies and refused on the fact in some others. that is why more examinations must be done so that there would be a more exact conclusion.

Key words: acid-base parameters, cerebrospinal fluid, fever and convulsion